History and future of the Iberian wild goat (*Capra pyrenaica*) in the Iberian Peninsula

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OBJECTIVE

The aim of the present bibliographic review is to make a brief compilation of the key aspects for understanding the history and future of the *Capra pyrenaica* in the Iberian Peninsula (IP).

INTRODUCTION and TAXONOMY

The *Capra pyrenaica* is an endemic ungulate of the IP, which makes it a unique and irreplaceable species. Even so, 2 of the 4 subspecies have become extinct:

- *C. pyrenaica lusitanica* (extinct) inhabited the northwest of the IP
- *C. pyrenaica pyrenaica* (extinct) inhabited the Pyrenees, known as 'bucardo'
- *C. pyrenaica victoriae* inhabits central and north areas of the IP
- *C. pyrenaica hispanica* inhabits areas closer to the Mediterranean coast

GENERAL CHARACTERISTICS

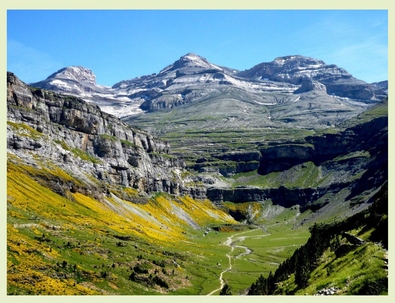
The main measures are:
- Length (without tail): around 140 cm in males and 130 cm in females
- Height (at the withers): 70-90 cm in males and 75 cm in females
- Weight: males weigh on average 50 kg and females 31 kg in Sierra Nevada, but males from Sierra de Gredos can weigh up to 120 kg

Sex determination is simple in adult animals, since they have a very clear sexual dimorphism, because of the horn length (much longer in males) and the pelage (darker in males).

HISTORY

There are many hypothesis on the origin of the *Capra pyrenaica* in the IP. Its abundance in prehistory is proven by the fossil remains found and supported by the numerous cave paintings.

In the Middle Ages, the Iberian wild goat was abundant, but their populations suffered a huge decline in the last centuries due to the excessive hunting, the habitat alteration and the agricultural development, leading to the *Capra pyrenaica lusitanica* to disappear in the late 19th century.



During the 20th century, only one population of the 'bucardo' remained, located in the Ordesa's Valley.
On January 6, 2000, the last *Capra pyrenaica pyrenaica*, a female, was found dead, becoming the second subspecies to disappear.

LOSS OF GENETIC VARIATION

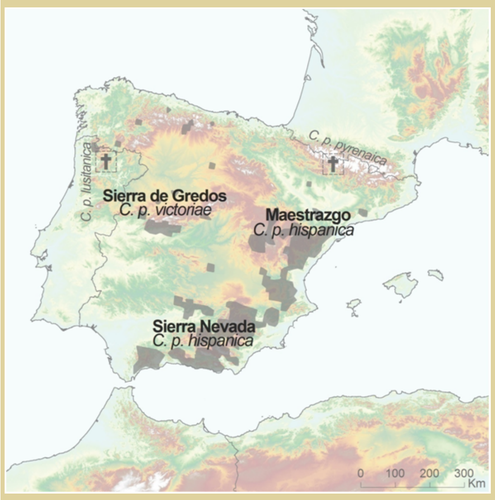
Due to the loss of half of the subspecies and the bottlenecks suffered in the early 20th century and in the 1960s, the *Capra pyrenaica* has a low genetic variation nowadays, as shown in this comparison with the domestic goat (*Capra hircus*):

Species/Subspecies	Expected Heterozygosity	Allelic Richness
C. pyrenaica victoriae	0,35	2,36
C. pyrenaica hispanica	0,39-0,43	2,54-2,55
Capra hircus	0,57-0,79	5,6-6,8

Because of this poor genetic variation, the Iberian wild goat may be more susceptible to epidemic outbreaks, such as those suffered with the sarcoptic mange in the late 1980s.

Two males of *Capra pyrenaica victoriae* fighting in the Sierra de Gredos

DEMOGRAPHY



The most important populations nucleus are:
- Sierra Nevada (16 000 Iberian wild goats of *C. p. hispanica*)
- Sierra de Gredos (8 000 Iberian wild goats of *C. p. victoriae*)
- Maestrazgo (7 000 Iberian wild goats of *C. p. hispanica*)

There exist in total more than 55 000 Iberian wild goats in the IP, with most of its population inhabiting Andalucía

MAIN THREATS

- Hunting, poaching and consequent imbalance of the sex and age ratio
- Habitat loss and fragmentation, that causes population isolation
- Epidemic outbreaks (specially the sarcoptic mange, that caused mortalities of the 97% of the population in Sierra de Cazorla in 1987)
- Contact with other ungulates, especially with the domestic livestock
- Climate change, which may force the species to migrate north

CONSERVATION

The main measures of conservation of the *Capra pyrenaica* are:
- To monitor populations and their health status
- To manage proper hunting
- To conserve their habitat and to study the introduction of wolves as natural population regulators
- To manage epidemic outbreaks and to control indicated domestic animals
- To restore natural corridors in order to increase gene flow

CONCLUSIONS

In the past, National Parks and protected areas allowed the recovery of the populations. Currently, in areas where there is overpopulation, the introduction of wolves as natural population regulators should be studied .
In the future, the climate change will may force the Iberian wild goat to migrate north so it will be necessary the restoring of the natural corridors.
Finally, we should study more about its epidemiology, ecology, genetics, etc. to ensure the conservation of the Iberian wild goat.